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EXAMINER	
CHOKSHI, PINKAL R	

ART UNIT	PAPER NUMBER
2425	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,313	SNIJDER ET AL.	
	Examiner	Art Unit	
	PINKAL CHOKSHI	2425	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/12/2009 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection. See the new rejection below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 2, 5-7, 9-11, 13-15, 17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,633,651 B1 to Hirzalla (hereafter referenced as Hirzalla) in view of US PG Pub 2008/0092168 to Logan (hereafter referenced as Logan).

Regarding **claim 1**, "an apparatus for playing video content" reads on the apparatus that process video for the automatic recognition of video sequences (col.1, lines 5-8) disclosed by Hirzalla and represented in Fig. 2.

As to "a comparator that compares the selected scene signature with scene signatures of the stored at least one video stream to identify one or more scenes whose scene signature is similar to the selected scene signature" Hirzalla discloses (col.1, lines 37-57; col.2, lines 13-15) that the processor compares stored signatures with live or recorded video stream to find a match.

As to "a player that plays the at least one scene whose scene signature is identified as similar to the selected scene signature" Hirzalla discloses (col.3, line 66-col.4, line 3) that after a match is found, user receives an alert signal on the display device to play the matched scene.

Hirzalla meets all the limitations of the claim except "the apparatus including: a video content storage that stores at least one video stream." However, Logan discloses (¶0231) that the audio/video signals received in apparatus are being stored in the device. As to "a scene defining processor that defines overlapping scene intervals in the at least one video stream" Logan discloses (¶0046) that the broadcast signals, received at the receiver, are divided into segments, which are overlapping. As to "a signature processor that computes a scene signature for each of the overlapping scene intervals, the video content storage storing the scene signatures of the at least one video stream" Logan discloses (¶0044 and ¶0055) that the metadata, that identifies

and describes overlapping segments of that broadcast programming, includes signature that is compared with the incoming broadcast signals to identify particular segments. Logan further discloses (¶0046) that the overlapping segments of broadcast signals received in the receiver are stored in the storage unit of receiver as represented in Fig. 1. As to "a selector that selects a scene signature which is descriptive of video content of a scene a user wants to view" Logan discloses (¶0231) that the signature (metadata) provided by the user controls the selective recording/viewing of program segments. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to defining overlapping scene, which identifies a scene signature and storing these signatures as taught by Logan in order to playback and scan stored video content with simple controls and with minimal knowledge of the available content (¶0009).

Regarding **claim 2,** "the apparatus, wherein each scene has a length between 30 seconds and 10 minutes" Hirzalla discloses (col.4, lines 63-67) that a typical sequence has a length of 30 seconds.

Hirzalla meets all the limitations of the claim except "the scenes of the stored at least one video stream are overlapped at intervals between 1 second and 2 minutes." However, Logan discloses (¶0146, ¶0147, ¶0175) that the delays between segments are within few seconds to under 2 minutes. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the

invention to have the interval between overlapped scenes as taught by Logan so no segments below that specific threshold are lost due to insufficient information on overlapping scenes.

Regarding **claim 5,** "the apparatus, wherein the selector selects a scene signature of a currently playing scene as the selected scene signature" Hirzalla discloses (col.2, lines 15-18) that the candidate signature is created on a real-time basis.

Regarding **claim 6,** "the apparatus, wherein the comparator identifies a similar scene, which has a smallest signature comparison figure of merit relative to the selected scene signature" Hirzalla discloses (col.1, lines 37-48) that after the comparison is made between digital signatures with stored digital signatures, if a positive match occurs, then device identifies user's selected frame to play it on the display device.

Regarding **claim 7,** "the apparatus, wherein the comparator determines whether the stored scene signatures of the stored at least one video streams are similar to the selected signature within a predetermined threshold and the player playing a scene whose signature is within the threshold" Hirzalla discloses (col.1, lines 41-44) that the digital signatures are compared with the stored signature and determines that the difference is within the threshold. Hirzalla further

discloses (col.3, line 66-col.4, line 3; col.5, lines 40-50) that after a positive match is found, user receives an alert signal on the display device to play the matched scene.

Regarding **claim 9,** "the apparatus, wherein the video content includes a plurality of video streams, and the apparatus further includes: a stream hop selector that selects a current stream which the player is playing" Hirzalla discloses (col.2, lines 15-18) that the candidate signature is created on a real-time basis.

As to "a stream hopper that compares scene signatures of scenes of the current stream with scene signatures of the plurality of video streams to identify a similar video stream" Hirzalla discloses (col.1, lines 37-57; col.2, lines 13-15) that the processor compares stored signatures with live or recorded video stream to find a match. As to "the stream hopper causes the player to transfer the playing to the similar stream" Hirzalla discloses (col.3, line 66-col.4, line 3) that after a match is found, user receives an alert signal on the display device to play the matched scene.

Regarding **claim 10,** "the apparatus, further including: a scene signatures table for storing the scene signatures arranged by similarity between the scene signatures" Hirzalla discloses (col.5, lines 61-63; col.6, lines 63-65) that the system creates a table for each special frame signature. As to "the comparator

accesses the scene signatures table to identify the similar scenes" Hirzalla discloses (col.5, lines 29-39, 63-66) that the system finds a match by searching for similar signature in the table.

Regarding **claim 11,** "the apparatus, wherein the signature processor stores the scene signatures in the scene signatures table" Hirzalla discloses (col.4, lines 27-62) that the signature table is created based color categories, pixels of the current frame, etc to match with the selected frame as represented in Fig.4.

Regarding **claim 13,** "the apparatus, further including: the signature processor computes the scene signatures as the video content is recorded" Hirzalla discloses (col.4, lines 27-62) that the signature table is created based on the video stream received in the receiver as represented in Fig.4.

Hirzalla meets all the limitations of the claim except "a recorder that records video content." However, Logan discloses (¶0231) that the audio/video signals received in apparatus are being stored in the device. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to store audio/video stream in the receiver as taught by Logan in order to recognize broadcast segments of interest.

Regarding **claim 14,** "the apparatus, wherein the signature processor includes: a scene defining processor that defines overlapping scene intervals in the video content, each scene interval of the overlapping scene intervals defining a scene" Logan discloses (¶0046) that the broadcast signals, received at the receiver, are divided into segments, which are overlapping.

As to "a signature processor that computes a scene signature over each scene interval" Logan discloses (¶0044 and ¶0055) that the metadata, that identifies and describes overlapping segments of that broadcast programming, includes signature that is compared with the incoming broadcast signals to identify particular segments. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to defining overlapping scene, which identifies a scene signature and storing these signatures as taught by Logan in order to playback and scan stored video content with simple controls and with minimal knowledge of the available content (¶0009).

Regarding **claim 15,** "the apparatus, wherein the scene defining processor selects a spacing between a beginning of each of the overlapping scene intervals based on a characteristic of the video content" Logan discloses (¶0158) that the characteristic type of the content is used to classify area of signatures. In addition, the same motivation is used as to reject claim 1.

Regarding **claim 17,** "a method for playing video content" reads on the method that process video for the automatic recognition of video sequences (col.1, lines 5-8) disclosed by Hirzalla and represented in Fig. 2.

As to "the method including: comparing the selected scene signature with a multiplicity of stored scene signatures which describe scenes of at least one stored video stream to identify at least one scene signature that is similar to the selected scene signature" Hirzalla discloses (col.1, lines 37-57; col.2, lines 13-15) that the processor compares stored signatures with live or recorded video stream to find a match.

As to "playing at least one scene whose scene signature is identified as similar to the selected stream signature" Hirzalla discloses (col.3, line 66-col.4, line 3) that after a match is found, user receives an alert signal on the display device to play the matched scene.

Hirzalla meets all the limitations of the claim except "a defining overlapping scene intervals in at least one stored video stream, each scene intervals defining the scene." However, Logan discloses (¶0046) that the broadcast signals, received at the receiver, are divided into segments, which are overlapping. As to "computing a scene signature over each overlapping scene interval, the computed scene signature describing a composite of characteristics of frames of the scene, and storing the computed scene signatures" Logan discloses (¶0044 and ¶0055) that the metadata, that identifies and describes

overlapping segments of that broadcast programming, includes signature that is compared with the incoming broadcast signals to identify particular segments. Logan further discloses (¶0158) that the characteristic type of the content is used to classify area of signatures. Logan further discloses (¶0046) that the overlapping segments of broadcast signals received in the receiver are stored in the storage unit of receiver as represented in Fig. 1. As to "selecting a scene signature" Logan discloses (¶0231) that the signature (metadata) provided by the user controls the selective recording/viewing of program segments. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to defining overlapping scene, which identifies a scene signature and storing these signatures as taught by Logan in order to playback and scan stored video content with simple controls and with minimal knowledge of the available content (¶0009).

Regarding **claim 18,** "the method, wherein the comparing of the selected scene signature with the multiplicity of stored scene signatures includes: computing a scene comparison figure of merit comparing the selected scene signature and each compared scene signature of the stored scene signature" Hirzalla discloses (col.1, lines 37-48) that after the comparison is made between digital signatures with stored digital signatures, if a positive match occurs, then device identifies user's selected frame to play it on the display device.

As to "quantitatively comparing the scene comparison figure of merit with a threshold and based on the computing and quantitative comparing, selecting the similar scene signature" Hirzalla discloses (col.1, lines 41-44) that the digital signatures are compared with the stored signature and determines that the difference is within the threshold. Hirzalla further discloses (col.3, line 66-col.4, line 3; col.5, lines 40-50) that after a positive match is found, user receives an alert signal on the display device to play the matched scene.

5. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirzalla in view of Logan as applied to claims 1-7 above, and further in view of US Patent 5,436,653 to Ellis et al (hereafter referenced as Ellis).

Regarding **claim 8,** Hirzalla meets all the limitations of the claim except "the apparatus, further including: a threshold selector that selects the threshold value." However, Ellis discloses (col.18, lines 26-30) that the warning message is used in setting the threshold for finding a match. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to set the threshold value as taught by Ellis in order to provide user an option to select the scenes with their proximity.

6. **Claims 16, 19, 21, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirzalla in view of Logan as applied to claim 1 above, and further in view of US Patent 7,103,222 B2 to Peker et al (hereafter referenced as Peker).

Regarding **claim 16,** combination of Hirzalla and Logan meets all the limitations of the claim except "the apparatus, wherein the selector selects the scene signature from a group of semantically identified scene signature values." However, Peker discloses (col.1, lines 40-41) that the value/signature of a scene can be assigned by a user. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to let the user select the scene signature as taught by Peker in order to minimize the grouping criterion (col.1, lines 42-43).

Regarding **claim 19,** combination of Hirzalla and Logan meets all the limitations of the claim except "the method, further including: computing the stored scene signatures based on motion parameters of the at least one video stream." However, Peker discloses (col.4, lines 30-34) that the low level features are selected based on motion activity, color, audio, and texture of video data. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use PCA technique to receive low level feature data as taught by Peker in order to explain variances of data attributes and also the distinction of being the best linear transformation for keeping the subspace that has largest difference.

Regarding **claim 21,** "the method, further including: the computing of the stored scene signatures being performed during the recording" Hirzalla discloses

(col.4, lines 27-62) that the signature table is created based on the video stream received in the receiver in real-time basis as represented in Fig.4.

Hirzalla meets all the limitations of the claim except "recording the at least one stored video stream prior to the selecting." However, Logan discloses (¶0231) that the audio/video signals received in apparatus are being stored in the device. In addition, same motivation is used as to reject claim 17.

Regarding **claim 22,** "the method, wherein the computing of the stored scene signatures includes: defining overlapping scene intervals in the at least one stored video stream, each scene interval defining a scene" Hirzalla discloses (col.2, lines 13-20) that the candidate signature is created from overlapping groups of frames.

Hirzalla meets all the limitations of the claim except "computing a scene signature over each scene interval." However, Logan discloses (¶0044 and ¶0055) that the metadata, that identifies and describes overlapping segments of that broadcast programming, includes signature that is compared with the incoming broadcast signals to identify particular segments. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to defining overlapping scene, which identifies a scene signature and storing these signatures as taught by Logan in order to playback and scan stored video content with simple controls and with minimal knowledge of the available content (¶0009).

7. **Claims 3, 4, 12 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirzalla in view of Logan and Peker, and further in view of US Patent 6,259,817 B1 to Ahmad et al (hereafter referenced as Ahmad).

Regarding **claim 3,** "the apparatus wherein the scene signatures of the stored at least one video streams are constructed using principal components vectors, the principle components vectors being computed by principle component analysis of selected low level features of the video content within the scene" Hirzalla discloses (col.1, line 61-col.2, line 7) that the digital signature (stored as well as candidate signatures) for frame is created using pixel values of the frames from a video stream, the number of hue or luminance categories, and a histogram representing the percentage of pixels in the defined categories.

Combination of Hirzalla and Logan meets all the limitations of the claim except "signatures are created using principle components analysis." However, Peker discloses (col.1, line 67-col.2, line 3) that the principal component analysis and factor analysis are known techniques used for low level features data. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use PCA technique to receive low level feature data as taught by Peker in order to explain variances of data attributes and also the distinction of being the best linear transformation for keeping the subspace that has largest difference.

Combination of Hirzalla, Logan, and Peker meets all the limitations of the claim except "the principle components vectors being computed by principle component analysis." However, Ahmad discloses (col.4, lines 9-10, 20-30) that one or more parameters are generated using principal component analysis and thereafter each image value of this parameter is compared with another image value to find the matching image. Ahmad further discloses (col.2, lines 19-32) that using principal component analysis on an image with a plurality of pixels, the parameter (principal component vector) can be derived, where the image value (signature) is determined for each video image for that one parameter. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use principal component analysis to define the matching scene signature as taught by Ahmad in order to efficiently store, display and search the plurality of video images and to categorize in a manner permitting rapid searching (col.2, lines 5-7).

Regarding **claim 4,** "the apparatus, wherein the low level features are selected from a group consisting of: an image luminance difference parameter, a frame complexity parameter, a mean absolute difference (MAD) motion estimation parameter, a motion parameter, and an image texture parameter" Peker discloses (col.4, lines 30-38) that the low level feature of content consist of motion activity, color, audio, texture etc. such as MPEG descriptors. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the

invention to use PCA technique to receive low level feature data as taught by Peker in order to explain variances of data attributes and also the distinction of being the best linear transformation for keeping the subspace that has largest difference.

Regarding **claim 12,** combination of Hirzalla and Logan meets all the limitations of the claim except "the apparatus, wherein the signature processor includes: a low level feature processor that computes one or more low level video content features." However, Peker discloses (col.4, lines 30-34) that the low level features are selected based on motion activity, color, audio, and texture of video data. As to "a principle components projector that projects the low level video content features onto a principle components space to define principle components vectors" Peker discloses (col.1, line 67-col.2, line 3) that the principal component analysis and factor analysis are known techniques define/used for low level features data. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use PCA technique to receive low level feature data as taught by Peker in order to explain variances of data attributes and also the distinction of being the best linear transformation for keeping the subspace that has largest difference.

Combination of Hirzalla, Logan and Peker meets all the limitations of the claim except "a scene signature generator that combines the principle components vectors of each scene to define the corresponding scene signature."

However, Ahmad discloses (col.4, lines 9-10, 20-30) that one or more parameters are generated using principal component analysis and thereafter each image value of this parameter is compared with another image value to find the matching image. Ahmad further discloses (col.2, lines 19-32) that using principal component analysis on an image with a plurality of pixels, the parameter (principal component vector) can be derived, where the image value (signature) is determined for each video image for that one parameter. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use principal component analysis to define the matching scene signature as taught by Ahmad in order to efficiently store, display and search the plurality of video images and to categorize in a manner permitting rapid searching (col.2, lines 5-7).

Regarding **claim 20,** "the method, wherein the computing of the stored scene signatures includes: performing principle components analysis of the motion parameters to produce principle component vectors" Hirzalla discloses (col.1, line 61-col.2, line 7) that the digital signature (stored as well as candidate signatures) for frame is created using pixel values of the frames from a video stream, the number of hue or luminance categories, and a histogram representing the percentage of pixels in the defined categories.

Combination of Hirzalla and Logan meets all the limitations of the claim except "signatures are created using principle components analysis." However,

Peker discloses (col.1, line 67-col.2, line 3) that the principal component analysis and factor analysis are known techniques define/used for low level features data. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use PCA technique to receive low level feature data as taught by Peker in order to explain variances of data attributes and also the distinction of being the best linear transformation for keeping the subspace that has largest difference.

Combination of Hirzalla, Logan and Peker meets all the limitations of the claim except "combining the principle component vectors within the each scene to define the corresponding scene signature." However, Ahmad discloses (col.4, lines 9-10, 20-30) that one or more parameters are generated using principal component analysis and thereafter each image value of this parameter is compared with another image value to find the matching image. Ahmad further discloses (col.2, lines 19-32) that using principal component analysis on an image with a plurality of pixels, the parameter (principal component vector) can be derived, where the image value (signature) is determined for each video image for that one parameter. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to use principal component analysis to define the matching scene signature as taught by Ahmad in order to efficiently store, display and search the plurality of video images and to categorize in a manner permitting rapid searching (col.2, lines 5-7).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PINKAL CHOKSHI whose telephone number is (571) 270-3317. The examiner can normally be reached on Monday-Friday 8 - 5 pm (Alt. Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Pendleton can be reached on 571-272-7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pinkal Chokshi/
Examiner, Art Unit 2425

/Brian T. Pendleton/
Supervisory Patent Examiner, Art Unit 2425